

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of MATSUI, et al.  
Serial No. Not Yet Assigned  
Filing Date Herewith  
Title HEAT INSULATING MATERIAL HAVING HIGH DURABILITY,  
METHOD FOR PRODUCING THE SAME, USE OF THE SAME,  
AND METHOD FOR APPLYING THE SAME

**PRELIMINARY AMENDMENT**

Please amend the above-identified application as follows:

**In the title:**

--(Amended) HEAT INSULATING MATERIAL HAVING HIGH DURABILITY, METHOD  
FOR PRODUCING THE SAME, USE OF THE SAME, AND METHOD FOR  
APPLYING THE SAME --

**In the Claims:**

Please amend the following claims as follows:

3. (Amended) A highly durable heat insulating material, according to claim 1, characterized in that the size of the mesh of said cloth material is from 0.2 to 10 mm.
4. (Amended) A highly durable heat insulating material, according to claim 1, characterized in that said cloth material is composed of a burned out cloth material, an unburned residual cloth material or a combination of the two.
5. (Amended) A highly durable heat insulating material, according to claim 1, characterized in that said inorganic heat insulating fiber is composed of alumina-silica, clay, zirconia, mullite, zircon, magnesia, calcia, dolomite, silicon carbide, silicon nitride, carbon fiber, or a combination of two or more of them.
6. (Amended) A highly durable heat insulating material, according to claim 1, characterized in that said refractory ceramic powder material is composed of one or more selected from the group of alumina-silica, fire clay, zirconia, mullite, zircon, magnesia, calcia, dolomite, chamotte, corundum, bauxite, alunite, silicon carbide and chromite as simple substances and composites of them.
7. (Amended) A highly durable heat insulating material, according to claim 1, characterized in that the high temperature characteristic of said application film of the surface hardening material is similar to that of the thermally sprayed film of the refractory ceramic.

8. (Amended) A method of fabricating the highly durable heat insulating material, according to claim 1, characterized by:  
covering a surface of the formed body of the inorganic heat insulating fiber with the cloth material;  
applying the raw material mix of the constituents of the surface hardening material to the surface of the formed body of the inorganic heat insulating fiber covered with the cloth material; and  
forming the application film of the surface hardening material and the thermally sprayed film of the refractory ceramic by spraying refractory ceramic powder material by flame fusion coating onto the surface of the formed body of the inorganic heat insulating fiber to which the raw material mix of the constituents of the surface hardening material has been applied.
9. (Amended) A furnace characterized by using the highly durable heat insulating material according to claim 1 as a part or the whole of its refractory.
10. (Amended) A smoke exhaust facility characterized by using the highly durable heat insulating material according to claim 1 as a part or the whole of its refractory.
11. (Amended) A tunnel characterized by using the highly durable heat insulating material according to claim 1 as a part or the whole of its refractory.
12. (Amended) A method of installing the highly durable heat insulating material for the use, according to claim 1, characterized by:  
covering a surface of a steel shell, a refractory material or concrete with a formed body or bodies of the inorganic heat insulating fiber a surface of which is covered beforehand with the cloth material;  
applying the raw material mix of the constituents of the surface hardening material to the surface of the fiber body covered with the cloth material; and  
forming the application film of the surface hardening material and the thermally sprayed film of the refractory ceramic by spraying the refractory ceramic powder material by flame fusion coating onto the surface of the formed body of the inorganic heat insulating fiber to which the raw material mix of the constituents of the surface hardening material has been applied.

#### REMARKS

This Amendment is being submitted in order to eliminate multiple dependent claims.

It is respectfully submitted that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Attached hereto is a marked-up version of the changes made to the title and claims by the current amendment. The attached page is captioned "Versions with markings to show changes made."

Respectfully submitted,

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By: John J. Kelly, Jr.  
John J. Kelly, Jr.  
Reg. No. 29,182  
KENYON & KENYON  
One Broadway  
New York, NY 10004  
Telephone No. (212) 425-7200  
Facsimile No. (212) 425-5288

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

The title has been amended as follows:

-- [HIGHLY DURABLE] HEAT INSULATING MATERIAL [AND FABRICATION METHOD],  
[USES AND INSTALLATION METHOD OF] HAVING HIGH DURABILITY, METHOD FOR  
PRODUCING THE SAME, USE OF THE SAME, AND METHOD FOR APPLYING  
THE SAME --

The claims have been amended as follows:

3. (Amended) A highly durable heat insulating material, according to claim 1 [or 2], characterized in that the size of the mesh of said cloth material is from 0.2 to 10 mm.
4. (Amended) A highly durable heat insulating material, according to [any one of claims 1 to 3] claim 1, characterized in that said cloth material is composed of a burned out cloth material, an unburned residual cloth material or a combination of the two.
5. (Amended) A highly durable heat insulating material, according to [any one of claims 1 to 4] claim 1, characterized in that said inorganic heat insulating fiber is composed of alumina-silica, clay, zirconia, mullite, zircon, magnesia, calcia, dolomite, silicon carbide, silicon nitride, carbon fiber, or a combination of two or more of them.
6. (Amended) A highly durable heat insulating material, according to [any one of claims 1 to 5] claim 1, characterized in that said refractory ceramic powder material is composed of one or more selected from the group of alumina-silica, fire clay, zirconia, mullite, zircon, magnesia, calcia, dolomite, chamotte, corundum, bauxite, alunite, silicon carbide and chromite as simple substances and composites of them.
7. (Amended) A highly durable heat insulating material, according to [any one of claims 1 to 6] claim 1, characterized in that the high temperature characteristic of said application film of the surface hardening material is similar to that of the thermally sprayed film of the refractory ceramic.
8. (Amended) A method of fabricating the highly durable heat insulating material, according to [any one of claims 1 to 7] claim 1, characterized by:
  - covering a surface of the formed body of the inorganic heat insulating fiber with the cloth material;
  - applying the raw material mix of the constituents of the surface hardening material to the surface of the formed body of the inorganic heat insulating fiber covered with the cloth material; and
  - forming the application film of the surface hardening material and the thermally sprayed film of the refractory ceramic by spraying refractory ceramic powder material by flame fusion coating onto the surface of the formed body of the inorganic heat insulating fiber to which the raw material mix of the constituents of the surface hardening material has been applied.

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9. (Amended) A furnace characterized by using the highly durable heat insulating material according to [any one of claims 1 to 7] claim 1 as a part or the whole of its refractory.
10. (Amended) A smoke exhaust facility characterized by using the highly durable heat insulating material according to [any one of claims 1 to 7] claim 1 as a part or the whole of its refractory.
11. (Amended) A tunnel characterized by using the highly durable heat insulating material according to [according to any one of claims 1 to 7] claim 1 as a part or the whole of its refractory.
12. (Amended) A method of installing the highly durable heat insulating material for the use, according to [any one of claims 9 to 11] claim 1, characterized by:
- covering a surface of a steel shell, a refractory material or concrete with a formed body or bodies of the inorganic heat insulating fiber a surface of which is covered beforehand with the cloth material;
  - applying the raw material mix of the constituents of the surface hardening material to the surface of the fiber body covered with the cloth material; and
  - forming the application film of the surface hardening material and the thermally sprayed film of the refractory ceramic by spraying the refractory ceramic powder material by flame fusion coating onto the surface of the formed body of the inorganic heat insulating fiber to which the raw material mix of the constituents of the surface hardening material has been applied.

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